

**REMARKS**

Claims 1 and 2 have been amended to recite that the fluoropolymer producing method is carried out substantially without using an aqueous medium. Support is found, for example, at page 1, line 15 to page 2, line 2 of the specification which describes that one object of the invention is to solve the problem caused by using an aqueous medium for producing fluoropolymers. Furthermore, there is no description concerning the use of an aqueous medium in the fluoropolymer producing method of the invention.

Entry of the amendment is respectfully requested as placing this case in condition for allowance.

Review and reconsideration on the merits are requested.

Claims 1 and 4-11 were rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 3,780,007 to Stallings.

Applicants traverse, and respectfully request the Examiner to reconsider for the following reasons.

The fluoropolymer producing method of claim 1 comprises continuously polymerizing a radical polymerizable monomer in a defined reaction-field. The defined reaction-field is in a supercriticality-expression state, under a pressure of not higher than 40 MPa, and at a temperature not higher than 100°C beyond the supercriticality-expression temperature of the defined reaction-field. The radical polymerizable monomer comprises a fluorine-containing ethylenic monomer. The fluoropolymer has a weight average molecular weight [Mw] not lower than 150,000 on a polystyrene equivalent basis, and a ratio [Mw/Mn] of the weight average

molecular weight [Mw] to a number average molecular weight [Mn] on a polystyrene equivalent basis higher than 1 but not higher than 3. Furthermore, the fluoropolymer producing method is carried out substantially without using an aqueous medium.

To the contrary, the polymerization method of Stallings proceeds in an aqueous medium. Particularly, the process of Stallings comprises polymerizing vinylidene fluoride monomer in a specific aqueous suspending medium while supplying sufficient water to the reaction mixture, as the polymerization progresses, to maintain a total reaction pressure which continually provides throughout the polymerization reaction a uniform dispersion of compressed monomer (See Stallings, claim 1).

Therefore, the claimed process differs from Stallings in that the process of Stallings is not carried out substantially without using an aqueous medium as required by the present claims. For this reason alone, it is respectfully submitted that claim 1 defines novel subject matter and is not anticipated by Stallings.

Applicants now comment on unobviousness of amended claim 1 over Stallings as follows.

In this field of art, fluoropolymers are produced mainly by subjecting fluorolefins to emulsion polymerization in an aqueous medium using a water-soluble initiator, or to suspension polymerization using an oil-soluble radical initiator. The conventional emulsion polymerization techniques using an aqueous medium pose certain problems as defined at page 1, line 22 to page 2, line 2 of the present specification. There is an important need for a method of producing

fluoropolymers without resort to using an aqueous medium in order to solve the above-noted problems of the prior art.

The fluoropolymer producing method of amended claim 1 is carried out substantially without using an aqueous medium. Particularly, the method of the present invention can provide fluoropolymers having a high molecular weight and a narrow molecular weight distribution, when carried out in a continuous polymerization in a supercriticality-expression state while maintaining the fluoropolymer concentration at a certain level or higher, without using an aqueous medium.

On the other hand, as noted above, the process of Stallings comprises polymerizing vinylidene fluoride monomer in a specific aqueous suspending medium. Thus, the process of Stallings is not capable of solving the problems encountered by use of an aqueous medium. Further, Stallings does not teach or suggest a process without using an aqueous medium.

For the above reasons, it is respectfully submitted that the amended claims are neither anticipated nor obvious over Stallings, and withdrawal of the foregoing rejection is respectfully requested.

Claims 2, 3, 13-17 and 19 stand rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,824,726 to DeSimone et al.

Applicants traverse, and respectfully request the Examiner to reconsider in view of the amendment to the claims and the following remarks.

Similar to claim 1, the fluoropolymer producing method of amending claim 2 is also carried out substantially without using an aqueous medium.

On the other hand, the polymerization process of DeSimone et al. includes (1) providing a reaction mixture (multi-phase mixture) comprising carbon dioxide and an aqueous phase, and containing a monomer and a polymerization mixture, and (2) polymerizing the monomer in the reaction mixture (DeSimone et al., col. 2, lines 17-23 and claim 1).

Furthermore, there is nothing in DeSimone et al. which teaches or suggests the desirability of conducting the polymerization process in the absence of an aqueous medium.

For the above reasons, it is respectfully submitted that amended claim 2 is neither anticipated nor obvious over DeSimone et al., and withdrawal of the foregoing rejection is respectfully requested.

For the same reasons, it is respectfully submitted that each of claims 3-11 and 13-19 depending from either of amended claim 1 or 2 is also patentable over Stallings and DeSimone et al.

Claim 12 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Stallings in view of U.S. Patent No. 6,716,944 to Saito et al.

Applicants respectfully traverse for the following reasons.

Saito et al. discloses advantages resulting from use of non-ethylenic fluorocarbon in a fluoropolymer producing method as indicated by the Examiner. However, as discussed above, the technique of Stallings necessarily employs an aqueous medium. Therefore, one skilled in the art could not arrive at the fluoropolymer producing method of claim 12, conducted substantially

without using an aqueous medium, by combining Stallings (which directs use of an aqueous medium) with Saito et al.

Withdrawal of the foregoing rejection under 35 U.S.C. § 103(a) is respectfully requested.

Withdrawal of all rejections and allowance of claims 1-19 is earnestly solicited.

In the event that the Examiner believes that it may be helpful to advance the prosecution of this application, the Examiner is invited to contact the undersigned at the local Washington, D.C. telephone number indicated below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



---

Abraham J. Rosner  
Registration No. 33,276

SUGHRUE MION, PLLC  
Telephone: (202) 293-7060  
Facsimile: (202) 293-7860

WASHINGTON OFFICE

**23373**

CUSTOMER NUMBER

Date: June 6, 2006